

# FAUNAL MONITORING IN RESPONSE TO HARBOR DREDGING

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# Overview

- Project introduction
  - FIAN
  - Deep Dredge
- Methods
  - Fauna
  - Vegetation
- Preliminary Results



# FMHD

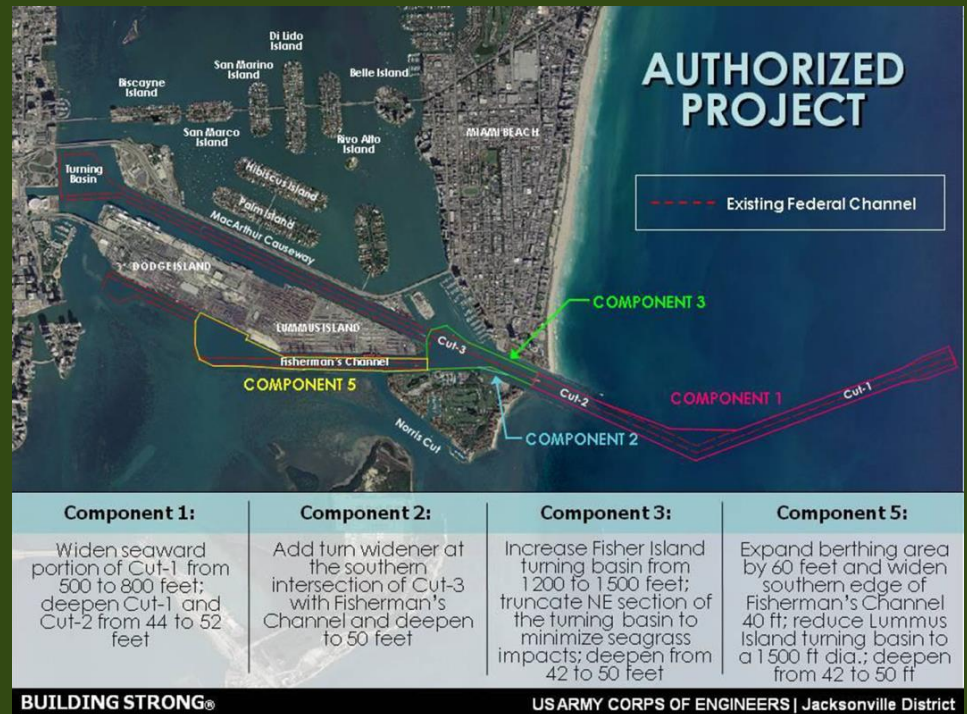
- Monitor and assess faunal composition and abundance and associated vegetation in POM and NBB
- Track possible effects of dredging on seagrass habitats adjacent to the port
- 2014-2016

# FIAN

- South Florida Fish and Invertebrate Assessment Network
- 2005-2011
- Pre-dredging
  - Baseline

# Deep Dredge Project

- Port of Miami
  - Deepen channel 50 feet
  - Allow Super Post Panamax megaships to utilize port
- Completed Sept 2015



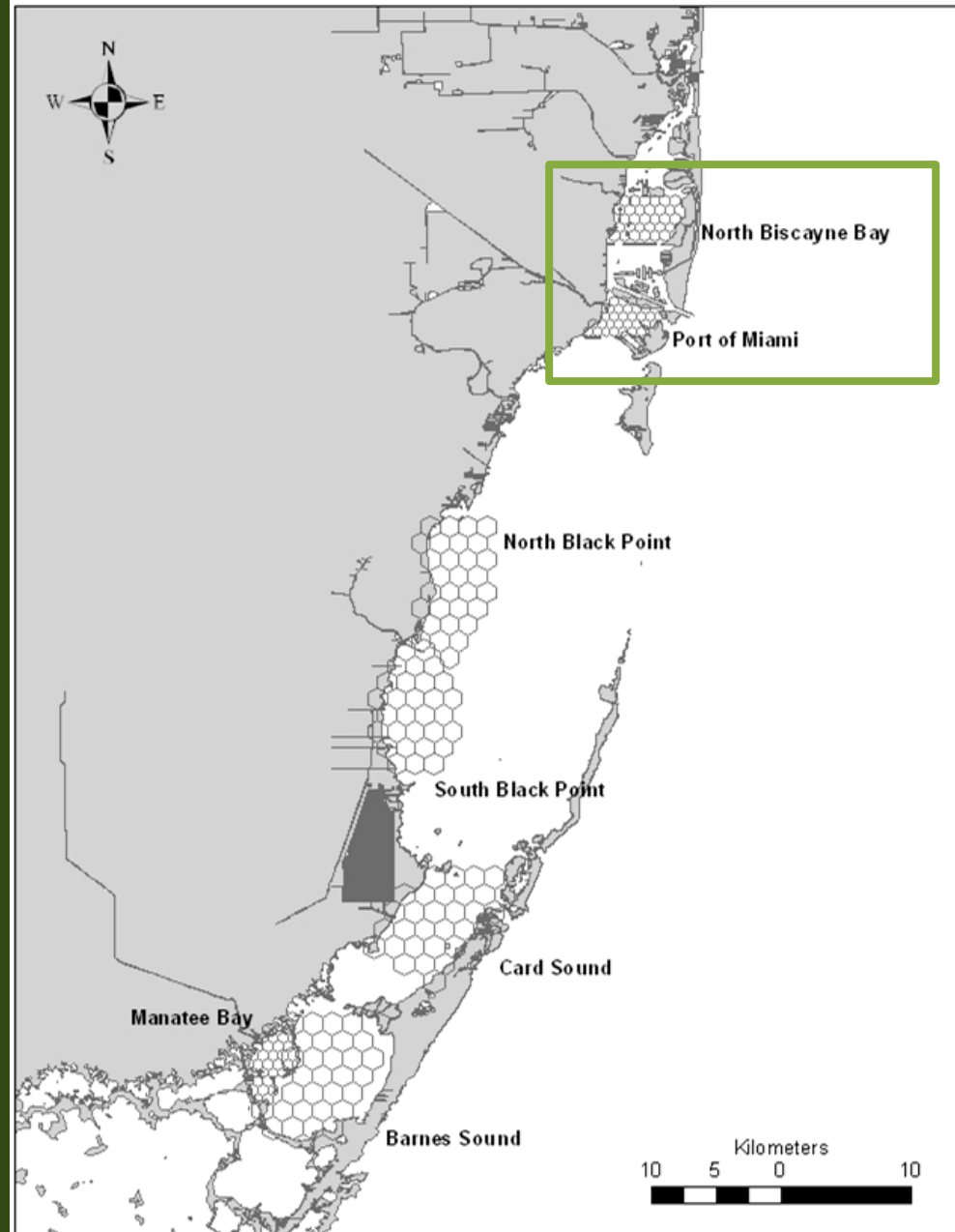
# Impacts of Dredging

- Increase turbidity, sedimentation, nutrient levels
- Decrease water quality, hydrographic changes, shifts in trophic structures and associated organisms
- Mechanical destruction\*
  - Physical removal
  - Burial of grass
- Faunal
  - Decrease primary production
  - Lose habitat
  - Reduce feeding success for predators and filter feeders

# Methods

- Utilized methods from FIAN
- Sampling grid of 30, hexagonal grids
  - Within each cell, 5 random locations
  - Inspect for vegetation before sampling
- Why POM and NBB?
  - Control
  - Adjacent site to determine changes in the altered environment

## Biscayne Bay Region



# Methods

- Environmental
  - NTU, temperature, salinity, sediment, and water depth
- Why is this important?





# Seagrass

- Braun-Blanquet Method

Cover Class	Description
0	Absent or no measurable cover
0.1	Solitary shoot with small cover
0.5	Few shoots, less than 5% cover
1	Numerous shoots, less than 5% cover
2	Any number of shoots but with 5% to 25% cover
3	Any number of shoots but with 25% to 50% cover
4	Any number of shoots but with 50% to 75% cover
5	Any number of shoots but with >75% cover

- Substrate type and seagrass/algae species
- Abundance and canopy height



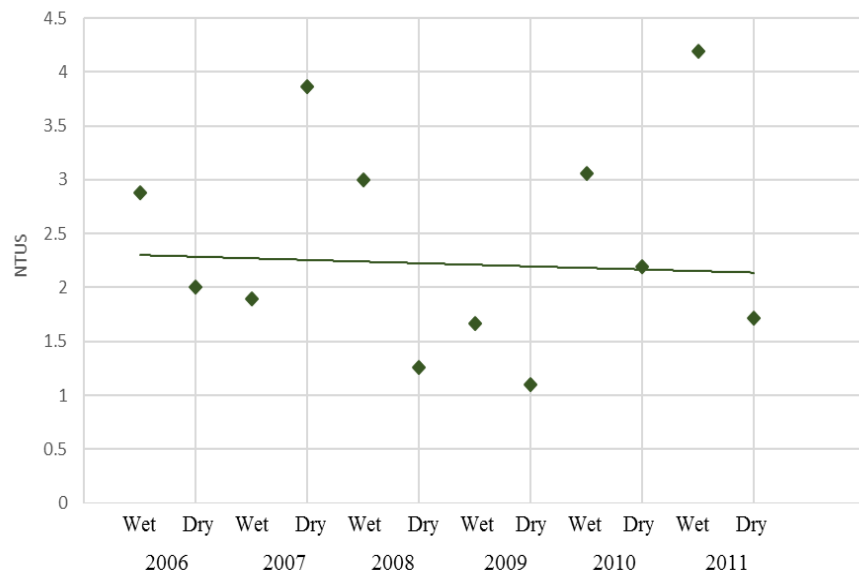
# FAUNA

- Throw trap collections

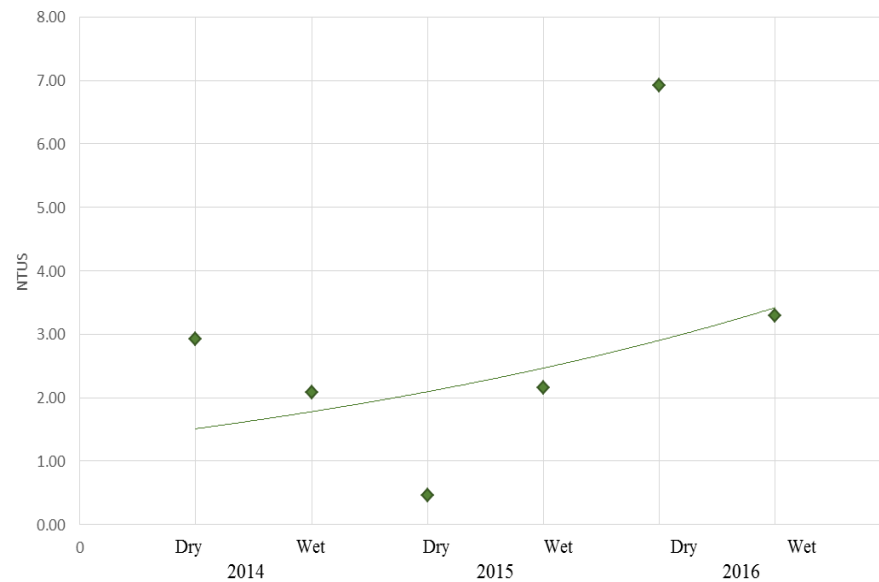


# Results- Turbidity

TURBIDITY- NBB



TURBIDITY- NBB





# Results- Turbidity

2014

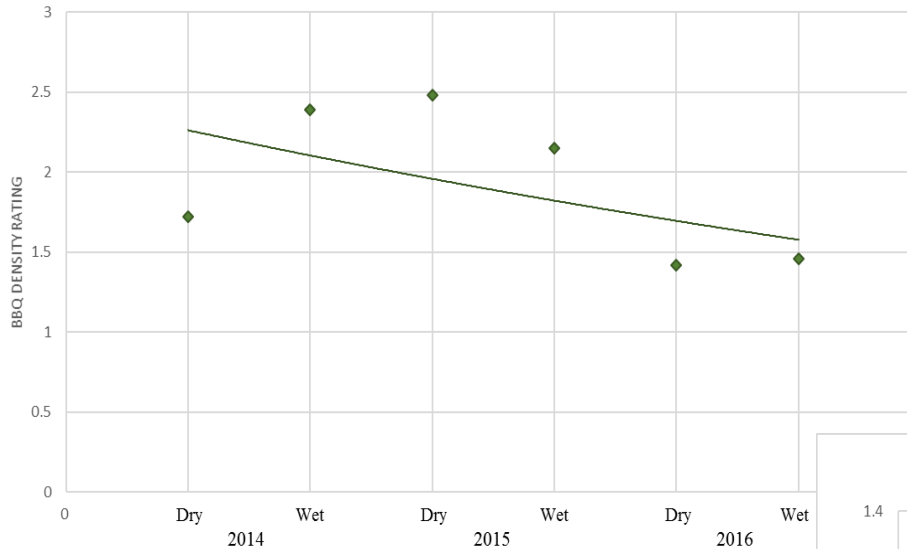


2016



# Results- Seagrass and Algae Density

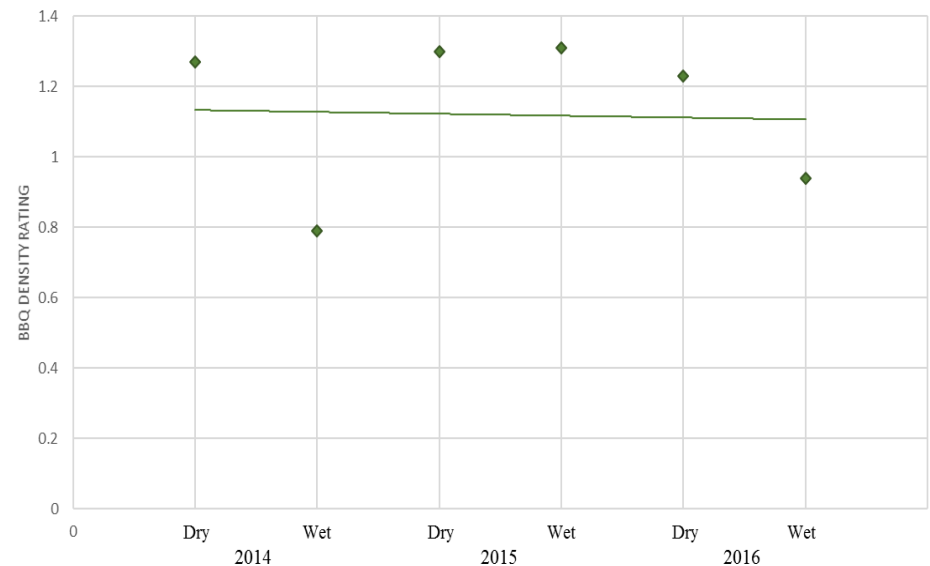
SEAGRASS DENSITY- NBB



Seagrass  
Significant decrease in  
density from ~ 2.25 to ~ 1.5

Algae  
Fairly stable with a slight  
density decrease

ALGAE DENSITY- NBB





# Results- Seagrass Cover

2014



2016



# Conclusion

- Preliminary results have shown that turbidity significantly increased from 2014-2016 in NBB
- Seagrass total had significant changes from 2014-2016 in NBB
- Work to be done
  - POM
  - Faunal composition in comparison to seagrass